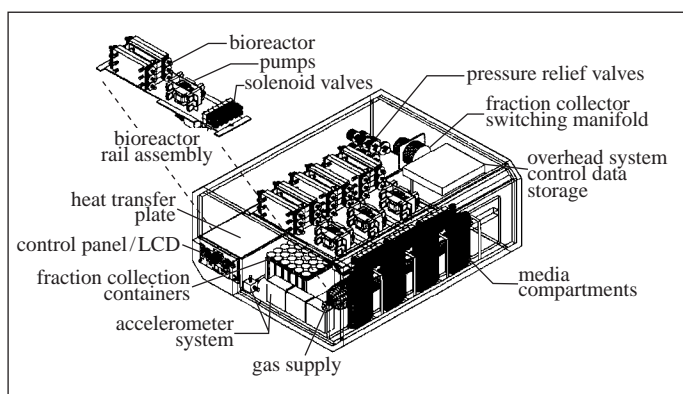




Cell Culture Module (CCM/NIH.C8)

The Cell Culture Module (CCM) is a self-contained, automated experiment system supporting three cell biology experiments focused on the effects of micro-gravity and space radiation on living systems.



Cell Culture Module (CCM)

The CCM mission continues the successful research collaboration between NASA Life Sciences, the National Institutes of Health (NIH), the DoD Space Test Program (STP) and the Walter Reed Army Institute of Research. The mission is the eighth of the continuing series (designated NIH.C) and is joined by investigators from the National Space Development Agency (NASDA) of Japan cell biology program. The flight will focus on life sciences experimentation, specifically growth and differentiation (maturation) of animal cell cultures within the automated CCM environment that are representative of tissue and whole animal systems.

Dr. Stephen Doty, the NIH.C investigator, is studying alterations in the cell cycle of cartilage which leads to a change in the mechanism of subsequent cell growth and differentiation of cartilage. The title of his experiment is "The Effects of Spaceflight on Cartilage Cell Cycling and Differentiation."

Cell culture techniques, used widely in the biotechnology and pharmaceutical industries, allow investigators to grow

(clone) millions of individual cells from tissues such as bone, muscle or other organs of interest. This technique provides millions of individual cells (experiment models) and reduces the variables and other complicating factors when trying to control whole animal experiments in space.

This experiment will study the mechanism responsible for the impaired growth of cultured cartilage cells that has been observed in previous spaceflight experiments. This information is important to fully understand the mechanism of skeletal changes that occur during spaceflight and may point to a more general microgravity effect on cell growth and proliferation.

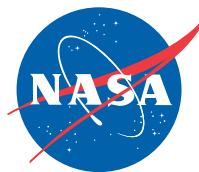
In the flight experiment, the cell cultures will be maintained in the automated CCM hardware, which provides nutrient media, oxygen and carbon dioxide for optimum cell growth. At various times during the mission, fixation and other manipulations are performed on the cells.

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